CHANGE ISSUE

ASA MASPS
ASAS MOPS

Tracking Information (committee secretary only)	
Change Issue Number	10
Submission Date	June 11, 2003
Status (open/closed/deferred)	OPEN
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Short Title for Change Issue:	Determination of Relative/Absolute Altitude for CDTI

MASPS Document Reference:		Originator Information:	
Entire document (y/n)	n	Name	T. E. Foster
Section number(s)	3.3.3	Phone	406-556-8066
Paragraph number(s)		E-mail	tefoster@montanadsl.net
Table/Figure number(s)		Other	

Proposed Rationale for Consideration (originator should check all that apply):	
	Item needed to support of near-term MASPS/MOPS development
	DO-260/ED-102 1090 MHz Link MOPS Rev A
	ADS-B MASPS
	TIS-B MASPS
	UAT MOPS
	Item needed to support applications that have well defined concept of operation
	Has complete application description
	Has initial validation via operational test/evaluation
	Has supporting analysis, if candidate stressing application
	Item needed for harmonization with international requirements
	Item identified during recent ADS-B development activities and operational evaluations
X	MASPS clarifications and correction item
	Validation/modification of questioned MASPS requirement item
	Military use provision item
	New requirement item (must be associated with traffic surveillance to support ASAS)

Nature of Issue:		Editorial	X	Clarity		Performance	X	Functional

Issue Description:

The ASA MASPS and/or ASAS MOPS needs to clarify which choice of altitude sources is best for determining the relative or absolute altitude of a traffic target being displayed on CDTI.

For Relative Altitude: The ADS-B information from a target includes both barometric pressure altitude (referenced to standard temperature and pressure) and geometric altitude. Geometric altitude will not always be available, especially for the lower NAV_p values. Therefore, normally target pressure altitude would be differenced with ownship pressure altitude to determine a target's relative altitude value. When pressure altitude from a target is not available or invalid, then the target geometric altitude and ownship geometric altitude would be differenced to determine the relative altitude of the target. This should provide an equivalent relative altitude except for parameter accuracy and resolution differences, however, these differences would likely not be observed on the CDTI display.

For Absolute Altitude: The ADS-B barometric pressure altitude information from a target only provides barometric altitude referenced to standard temperature and pressure. No barometric corrected altitude or barometric correction value is available. ADS-B requires that the pressure altitude source be the same source that is used and reported by Mode C or Mode S equipment on the aircraft. Like TCAS, CDTI only has standard altitude available from a target for use to display the absolute altitude for the target. An issue

has been raised regarding the display of standard altitude for targets on CDTI when ownship is being operated with barometric corrected ownship altitude by the flight crew. Is this an operational problem?

Originator's proposed resolution:

Clarify the usage of altitude sources for determination of relative and absolute altitude of a target for display on CDTI.

Author's Recommended Resolution: For Relative Altitude for CDTI targets, require the altitude difference to be based on pressure altitude, unless pressure altitude from a target is not available or invalid, then the target geometric altitude and ownship geometric altitude would be differenced to determine the relative altitude of the target. For Absolute Altitude for CDTI targets, clarify that the absolute altitude displayed for CDTI targets is always based on standard altitude, irrespective of the altitude (corrected or standard) being used by ownship flight crew.

Administrative Notes:

Response from Bob Hilb (06/10/2003):

> Although I generally agree with your paper, I do have a couple of concerns.
>
> As far as relative altitude, except for RVSM approved aircraft, I believe GPS geometric altitude would give better accuracy than barometric and WAAS geometric better than any barometric. In any case, I believe we should use the best available as the rule.
>
> As far as actual, we are following the TCAS standard. Which is, if the system has the barometric correction available to correct the barometric altitude then actual altitude could be displayed any time the crew would want it. If the correction is not available, then the actual altitude can be displayed full time only above transition altitude (in the US FL180). Below transition altitude the display of actual altitude is limited to 30 seconds.
>
> The above implementations would be covered in crew training so the only distinction on the screen would be to differentiate relative from actual.